

(No Model.)

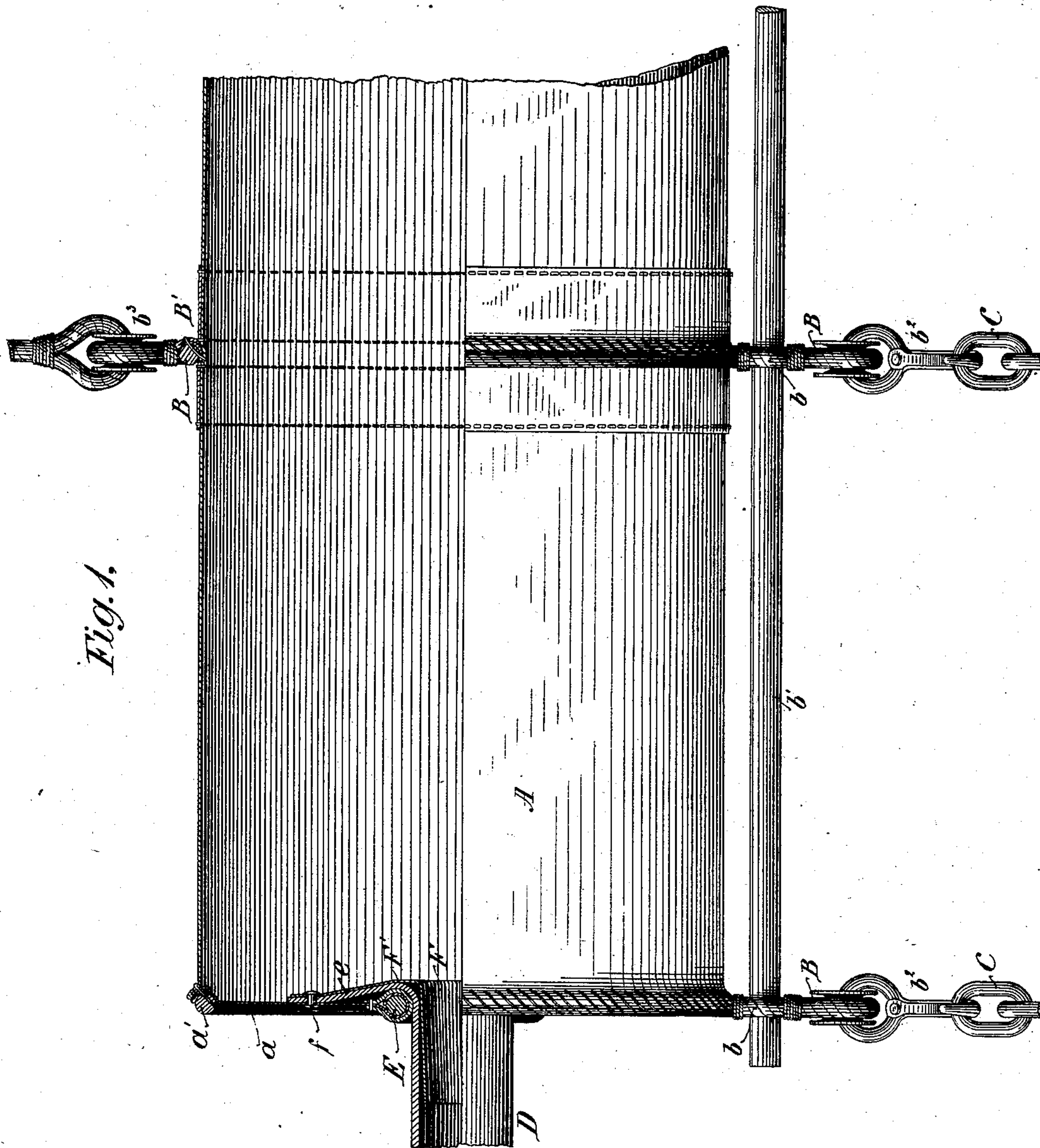
3 Sheets—Sheet 1.

J. F. SPEARING.

APPARATUS FOR RAISING SUNKEN SHIPS.

No. 259,937.

Patented June 20, 1882.



WITNESSES

Wm. A. Skunkle
Ernest Abshagen

INVENTOR

John F. Spearing

By his Attorneys

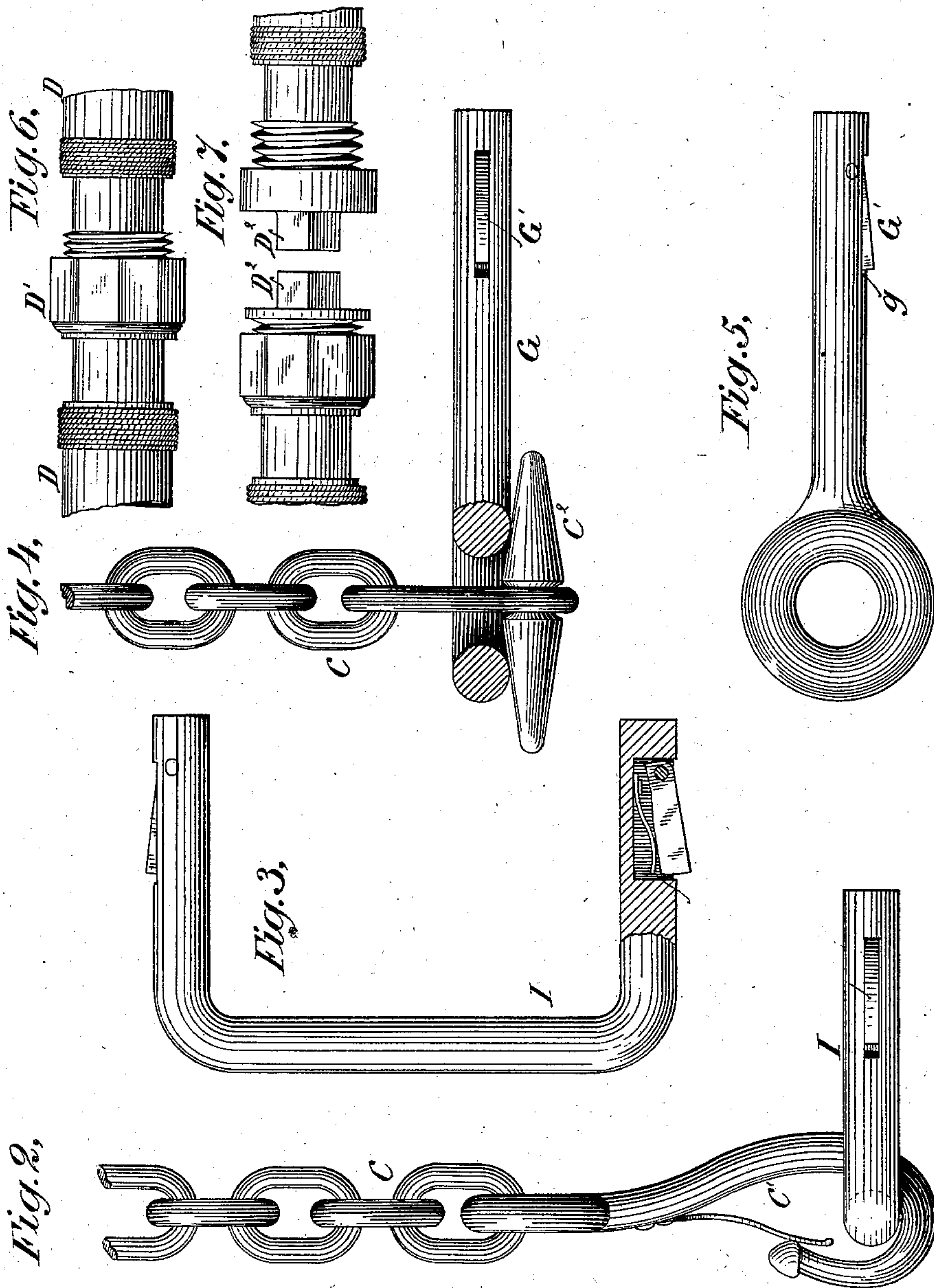
Baldwin, Hopkins, & Howe

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Fig. 8.

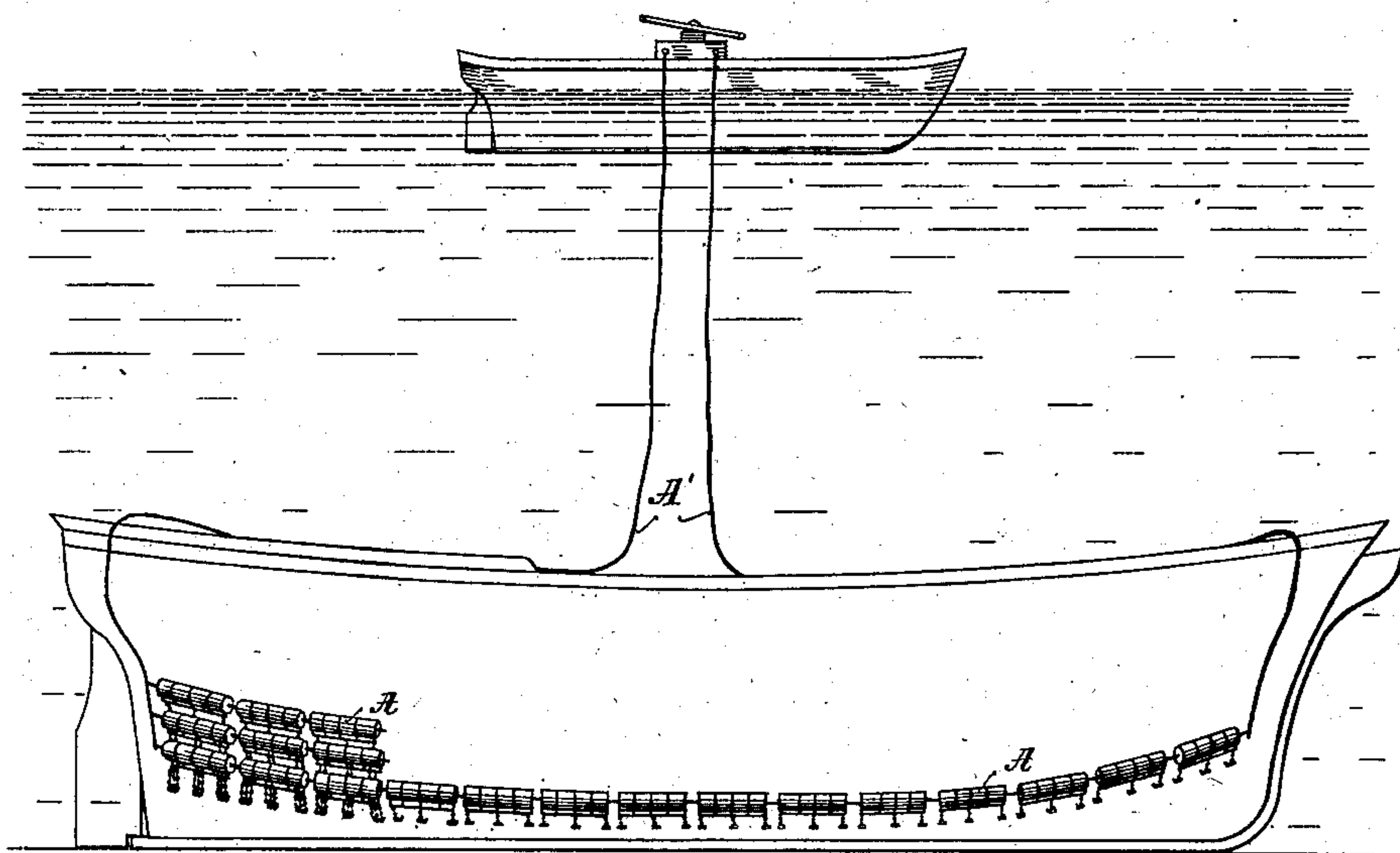
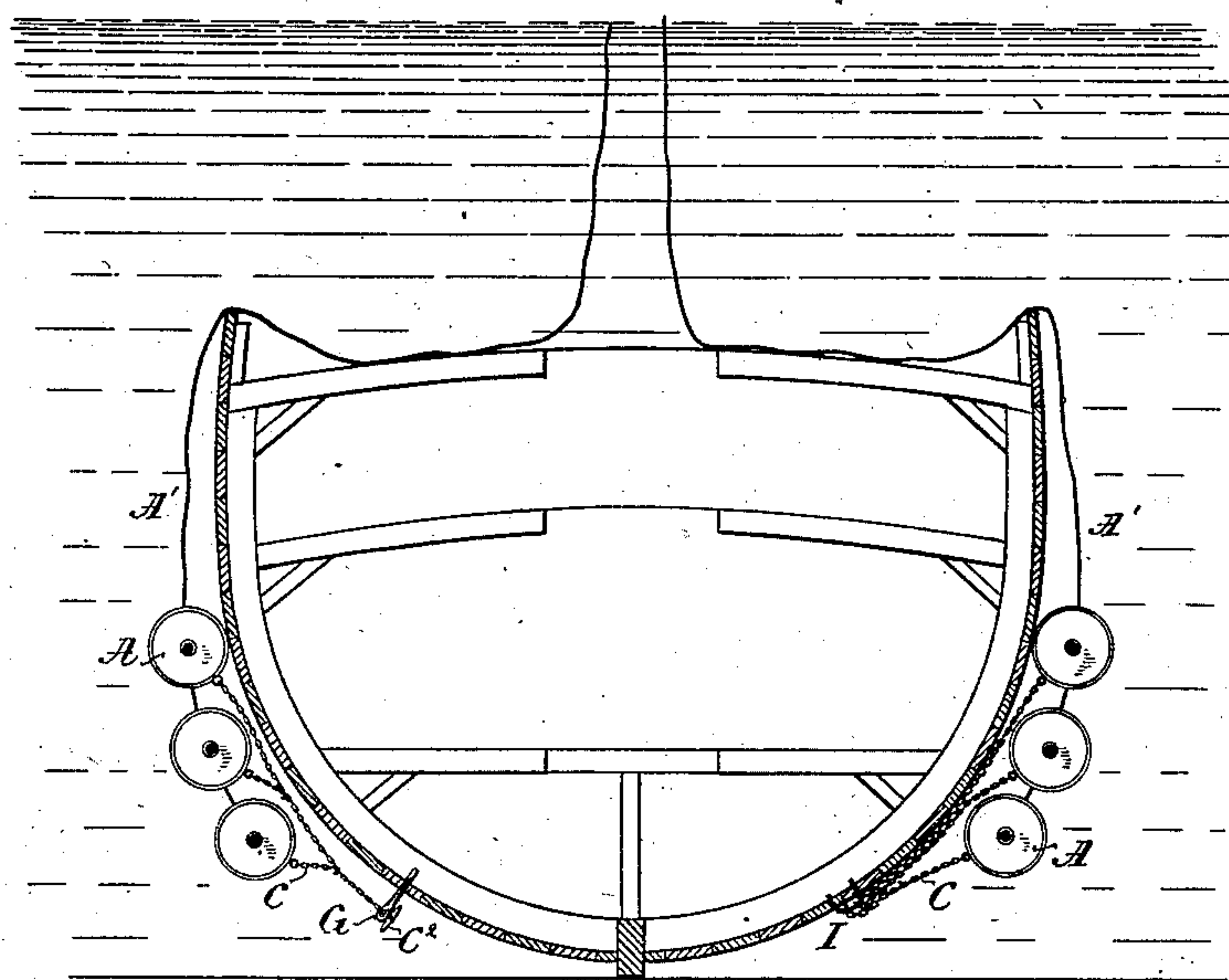


Fig. 9.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN F. SPEARING, OF NEW ORLEANS, LOUISIANA.

APPARATUS FOR RAISING SUNKEN SHIPS.

SPECIFICATION forming part of Letters Patent No. 259,937, dated June 20, 1882.

Application filed January 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. SPEARING, of New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Raising Sunken Crafts, of which the following is a specification.

My invention contemplates the use of air bags or vessels which are placed in position and secured to the craft and then inflated with compressed air, so that by their buoyancy they will float the craft to the surface of the water. I am aware, however, that air-vessels have been used before for this purpose, and I therefore make no claim, broadly, to their use.

My invention consists in certain improvements in the construction and manner of application of air-vessels and in the devices for applying them to lift the vessel, all of which will hereinafter be fully described.

In the accompanying drawings, Figure 1 is a detail sectional view, partly broken away, of one of the air-vessels. Figs. 2, 3, 4, and 5 are detail views, showing the lifting-chains, hook and key, and bolt and staple to be applied to the side of the vessel. Figs. 6 and 7 are detail views, showing the coupling or connecting bags. Fig. 8 is an elevation showing the lifting-bags applied to a sunken craft; and Fig. 9, a transverse section, also showing the lifting-bags applied to a sunken craft.

The first part of my invention consists in certain improvements in the construction of the air-bag itself, whereby it is rendered of great strength and durability, and is capable of being applied and secured to the sides of the craft with great facility.

The bag A is composed of any suitable material, such as rubber or linen, cotton or silk, which has been rendered air-tight. It is preferably made of a length considerably greater than its diameter, and cylindrical in shape. Each end is formed by a circular piece of material, *a*, which is firmly stitched in the mouth of the bag, and is braced and strengthened by a rope, *a'*, which is sewed or otherwise secured around the seam. The bag is encircled at suitable intervals by ropes B. These ropes serve to brace and strengthen the bag, and also serve as points of connection for the buoys and lifting-ropes. In order to secure them firmly to the bag and prevent wear, they are

stitched or otherwise secured to a band of canvas or other material, *B'*, which is in turn stitched to the bag itself. This affords a very secure attachment and preserves the body of the bag from the wear of the encircling rope.

In order to secure a uniform lifting power for the bags, a loop or eye, *b*, is formed in each of the ropes B, through which is thrust a brace-rod, *b'*, the size of which is of course regulated by the lifting capacity or size of the bag. At each end of the bag, and at suitable distances along its length, hooks *b²* are secured to the ropes B. I have shown the hooks as attached to each alternate rope B, and as held by eyes secured in loops formed in the ropes. The lifting chains or ropes C are connected to these hooks, and to prevent the chains from escaping from them I prefer to use a snap or spring-closed hook, as shown in the drawings.

Where it is desirable or expedient to use indicating-buoys in connection with the floating bags, eyes *b³* should be provided at the top of the bags for the attachment of the buoy-ropes.

The lifting-chains C are provided at their ends which are to be secured to the sunken vessel either with spring-hooks *C'* or with keys *C²*, according to the manner in which they are to be connected with the vessel, as will be fully set forth hereinafter.

Coupling-tubes D, of any suitable material, are secured in the ends of each bag, and are provided with suitable coupling devices, *D'*, so that any desired number of bags may be connected in series.

Any suitable and ordinary hose-coupling may be used for uniting the tubes D, and it is therefore not necessary to show and describe such coupling in detail. The coupling should, however, be such as to permit any of the tubes to be closed by a screw-cap, *D²*, so that the bags may be used independently or in series, as may be desired.

In order to connect the tubes D securely with the ends of the bags, so that the joint will not be liable to be torn or ruptured by any strains on the tubes, I unite them in the following manner: An aperture is cut in the end of the bag and a metal ring, E, is sewed therein. A leather covering is then drawn over the ring and stitched

to the end piece of the bag both inside and out. This gives great strength and prevents the stitches which secure the ring directly to the end piece from being worn. The coupling-tube D should be just large enough to enter the ring E, and the end which is inserted through the ring is split into flaps *e*, which are turned up against the end piece of the bag. A funnel-shaped tube, F, the larger part of which is of greater diameter than the bore of the tube, and which has a right-angle base or flange, F', is driven into the tube and ring opening E from the inner side of the end piece of the bag. I then rivet the split ends of the tube to the flange close up to the funnel. The flange F', split ends of the tube, and end piece of the bag are then securely fastened together by rivets *f*. Any pull or strain on the tube will draw the funnel farther into the ring and will bind the tube more tightly. It will be seen that the joint thus formed is of great strength and is a perfectly-tight one.

In order to connect the lifting-chains with the hull of the vessel to be raised, I employ an improved bolt, G, which is made in the following manner: The shank of the bolt, near its end, is formed with a recess or slot, *g*, in which a dog or pawl, G', is pivoted. This pawl is normally caused to project somewhat by a spring in the bottom of the slot. The enlarged head of the bolt H is formed with an eye for the attachment of the lifting-chains. To apply the bolt a hole is drilled in the side of the hull sufficiently large to allow the bolt freely to pass in. The spring-pawl allows the bolt to enter, but upon its introduction springs out and prevents its withdrawal.

Instead of using the bolt just described, I may use the staple I shown in Fig. 3, each leg of which is provided with a spring-pawl similar to that of the bolt described, and the operation of the two is identical. Where the keys C² on the ends of the lifting-rope are employed I use the bolts G, having eyes in their enlarged heads. The key is thrust endwise through the eye in the head of the bolt, and turns crosswise after its introduction, and is thus prevented from being withdrawn. Where the staples are used I employ the spring-hooks C' on the lifting-chains.

In Fig. 9 of the drawings I have shown the lifting-bags as applied independently to the sides of the vessel. Each bag has one end closed, and the other is connected by a tube, A', with an air-compressing apparatus, so that each bag is inflated independently. When the bags are thus employed it is desired to use a cluster or bunch of two, three, or more of them, as shown in the drawings, according to the work to be done on each side of the vessel. Each bag may be attached to independent staples or bolts; or where the staples are used the entire cluster of bags—two, three, or more in number—may be attached to the same staples; or the lifting-chains of some of the bags may be attached to the chains of the other

bags and not be directly connected to the staples. In practice two staples—one for each end, and perhaps a third one for the middle lifting-chain of each bag—are all that are necessary.

In Fig. 8 I have shown several series of bags connected together and arranged on each side of the vessel. Any desired number of series of connected bags may be used on each side of the vessel, and each bag connected with suitable staples or eyes, as described. The end bags of each series are connected at the front and stern of the vessel by pipes A' with the air-compressing apparatus.

In some cases the bolts G may be dispensed with, and where the hull of the vessel is of sufficient strength to stand the strain the locking-key may be inserted directly through the hole in the hull instead of through the eye in the head of the bolt G.

Buoys may be used, if desired, as before mentioned, the buoy-ropes being secured to eyes on the tops of the bags.

It will be noticed that by my improved arrangement the use of the large, heavy, cumbersome lifting-chains which have heretofore been passed under the hull or around the hull from prow to stern is dispensed with. Such chains are very unwieldy and difficult of application, and the advantages of my arrangement will be appreciated by those skilled in the art. Any number of bags may be joined in a series to form a practically continuous air-vessel. Thus, instead of arranging one or several series on each side of the vessel, one or more continuous series extending entirely around the vessel may be employed.

As will be understood, the staples or bolts are placed in position and the uninflated bags connected therewith by a diver. The bags are then inflated by the compressing apparatus, which is floated alongside the sunken craft, and the bags being inflated will, by their buoyancy, float the craft to the surface of the water. The craft may then be pumped out or towed away to a place of safety.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The air-bag for use in raising sunken vessels, consisting essentially of the bag proper, the canvas or other bands encircling it and stitched or otherwise secured to it, and the ropes *b*, encircling the bag and stitched or otherwise secured to the encircling bands.

2. The combination, substantially as set forth, of the air-bag, the ropes *b*, encircling it, the brace-rod for bracing the bag, and the lifting chains or ropes.

3. The combination, substantially as set forth, of the air-bag, the lifting-chains connected therewith, and the bolts or staples adapted to be secured directly in the sides of the hull.

4. The combination of the air-bag, the end tube, the ring-aperture in the end of the air-bag, the funnel, and its flange, substantially as set forth.

5. The combination, substantially as set forth, of the series of air-bags, their connecting-tubes and coupling devices for connecting the bags directly to each other in connected series, the
5 lifting-chains, the devices for connecting the lifting-chains of each bag directly to the hull of the vessel, and the inflating-tube A'.

6. The combination of one or more series of air-bags coupled together end to end in con-
10 nected series by means of the connecting air-tubes, as set forth, one or more series being arranged on each side of the craft to be floated, lifting-ropes attached to the bags, devices for
15 connecting the lifting-ropes of each bag directly with the hull of the vessel, and air-tubes connecting with the ends of each series of bags

for introducing compressed air into them, substantially as shown and described.

7. The combination, substantially as set forth, of the air-bag, lifting-chains connected there- 20 with, the bolts or staples constructed with pawls or dogs, as described, and adapted to be introduced into the hull of the vessel, and devices for connecting the lifting-ropes with the bolts or staples. 25

In testimony whereof I have hereunto subscribed my name this 20th day of December, A. D. 1881.

JOHN F. SPEARING.

Witnesses:

JOS. H. SPEARING,
D. C. BOWERS.